Perceptual and Motor Skills, 1991, 72, 499-503. © Perceptual and Motor Skills 1991

SUBJECTIVE PSEUDOCYESIS (FALSE PREGNANCY) AND ELEVATED TEMPORAL LOBE SIGNS: AN IMPLICATION[1]

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Summary.—Twenty-two percent of 106 undergraduate university women reported symptoms of pseudocyesis: cessation of menstruation, abdominal enlargement, morning sickness, and breast changes. These women also displayed significant elevations in temporal lobe signs with particular involvement of putative right hemispheric processes. Women prone to pseudocyesis displayed more memory blanks, nocturnal akinesia, awareness of abdominal sensations, and exotic beliefs such as alien intelligence; the phenomenon was 10 times more frequent in Roman Catholic women than in Protestant women.

Pseudocyesis is associated with a belief that one is pregnant as well as the initial, expected morphological changes (Taylor & Kreeger, 1987). Persinger and Makarec (1987) and their colleagues have shown that people who reported signs and symptoms indicative of temporal lobe lability are also more suggestible, imaginative, and prone to traditional right-hemispheric processes (Richards & Persinger, 1991). One logical extension of this concept is that women who report symptoms of pseudocyesis should display elevated temporal lobe signs and exotic beliefs. The syndrome would be encouraged by a history of beliefs that required compartmentalization (Persinger, 1989) and the acceptance of inconsistent ideas, i.e., "men and women are equal but only men can be priests."

All female university students ($n = 106$) who were registered in second-year psychology courses over three successive years (1984-1986) served as subjects. They had been administered Wilson and Barber's (1978) Inventory of Childhood Memories and Imaginings (ICMI) and the Personal Philosophy Inventory or PPI (Makarec & Persinger, 1990). Those females (22%) who responded affirmatively to the ICMI Question 45 "I have at some time in my life thought I was pregnant and in addition to not menstruating, developed other symptoms of pregnancy (e.g., morning sickness, abdominal enlargement, breast changes, etc.) only to find out later that I was not pregnant" were compared to those who had answered "no" to this question.

The response (0 no, 1 yes) to Question 45 was significantly ($p < .001$) correlated (phi coefficients in parentheses) with only the following other

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childhood memory items: ICMI 20 "When I was a young child I believed that my dolls were alive" (0.52), ICMI 28 "I have had an orgasm (or orgasms) just by imagining only" (0.37), ICMI 40 "I believe reincarnation possible and I have become aware of a life (or lives) that I may have lived prior to this one" (0.30), and ICMI 44 "I have at times thought something happened to me, developed physical symptoms but later found that what I thought happened never occurred" (0.35).

Chi-squared analyses indicated a significant (13.73, $p < .001$) denominational difference in incidence; of the 89 women who identified an affiliation 95% of the reporters of pseudocyesis were Roman Catholic while the remaining person was Protestant (61% of our sample were Roman Catholic). Stated alternatively, 33% ($n = 18$) of the Roman Catholic women but 3% ($n = 1$) of the Protestant women reported pseudocyesis. The first ten women whose scores were loaded on the data base who experienced these symptoms within the last two years and 10 age-matched women who had not experienced these symptoms were selected and interviewed; 80% or 8 of the women who reported pseudocyesis (vs one of the reference group) had experienced a major disruption in bonding (death of or separation from a biologically significant male) within 3 months of the symptoms (likelihood ratio = 11.02, $p < .001$).

Women who reported symptoms of pseudocyesis displayed (all dfs = 1,104) more frequent [mean (standard deviation)] complex partial epileptic signs [41 (17) vs 27 (16)%; $F = 13.36$, $p < .001$], interictal-like signs [44 (11) vs 35 (13)%; $F = 9.39$, $p < .01$], and memory blanks [51 (24)% vs 33 (25%); $F = 9.08$]. There were no differences between the two groups with respect to control items [79 (11) vs 82 (07); $F = 1.26$], a cluster of temporal lobe epileptic-relevant items [39 (12) vs 44 (07); $F = 2.67$], or age [25.6 (10.7) vs 25.1 (9.4) yr.; $F = 0.04$].

With respect to the subclusters of the scale (Persinger & Makarec, 1991) for temporal lobe signs, women who reported false pregnancies also displayed (all dfs = 1,104) more frequent incidence of automatic behaviors [61 (36) vs 33 (25); $F = 18.48$, $p < .001$], depersonalization [69 (28) vs 43 (28); $F = 15.85$] and olfactory sensations [34 (25) vs 16 (19); $F = 12.60$]. There were no statistically significant differences between the two groups for the other subclusters that included visual experiences, widened affective, auditory-vestibular sensations or a sensed presence.

Phi coefficients between the pseudocyesis item and each of the 140 Personal Philosophy Inventory items were completed. To minimize chance inclusion, only those items with $p < .001$ were selected (coefficients in parentheses); they were (decreasing in strength): Q97 ($\phi = 0.47$), I sometimes feel a sensation or a bulge in my abdomen; Q88 (0.40), I often feel as if things are not real, Q79 (0.40) Lightning is one of my fears; Q10 (0.39), There is

good evidence that Life exists on other planets; Q27 (0.35), About once a year I will awaken during sleep and not be able to move; Q109 (0.35) I have had experiences when I felt I was somewhere else.

Factor analysis [principal components; PC, SPSS^x] was performed on intercorrelations among these six items that displayed the strongest correlations and contained yes/no percentages greater than 19% and less than 81%. After varimax rotation, two factors emerged that explained 49% of the variance. Factor 1 (eigenvalue, 1.86) was loaded exclusively ($r > 0.60$) by Items Q97, Q27, and Q109; Factor 2 (eigenvalue, 1.03) was loaded exclusively by the Items Q10 and Q88. Multiple regression analysis with ICMI Item 45 as the dependent variable and only those Personal Philosophy Inventory variables whose yes/no percentages were greater than 19% and less than 81% was completed. Four variables (B and standard error of B in parentheses) generated a multiple R ($F_{4,101} = 27.81$, $p < .001$) of 0.72 (adjusted r^2, 51%); they were Q97 [0.31 (0.06)], Q88 [0.26 (0.06)], Q79 [0.30 (0.06)], and Q10 [0.22 (0.06)], respectively; the constant was −0.18. A discriminant analysis showed that 90% of those who did not report pseudocyesis and 83% of those who reported this phenomenon were correctly classified by a function composed of these four variables.

The two groups of women were also measured according to an equation composed of phenomenological clusters (Richards & Persinger, 1991) that explained more than 50% of the variance in Vingiano's (1989) hemisphericity quotient. The means and standard deviations were 0.72 (0.20) and 0.54 (0.15) for those who did and did not report the phenomenon ($F_{1,104} = 22.35$, $p < .001$). These results suggest a prominent role of right-hemispheric processes in the occurrence of symptoms of pseudocyesis.

We (Persinger & Makarec, 1987; Makarec & Persinger, 1990) have suggested that all limbic epileptic phenomena occur in less intense forms as a continuum within normal people. The existence of this continuum has been supported by the systematic elevation of experiences suggestive of temporal lobe activity in progressively labile populations, such as artists (Makarec & Persinger, 1985), psychics (Persinger & Fisher, 1990), and limbic epileptics (Persinger & Makarec, 1987); a concomitant neurophysiological continuum is indicated by the symptomatic shift from auras to altered consciousness to motoric automatisms as a function of the percentage of recruited neurons within the labile pool of limbic neurons (Babb, Wilson, & Isokawa-Akesson, 1987).

According to this hypothesis the marked similarity in reports (olfactory stimuli, depersonalization, immobilization, memory blanks, amenorrhea, and enhanced "awareness" of abdominal sensations) between normal women who report pseudocyesis and women with verified electrical foci in the right mesiobasal temporal lobe (Remillard, Andermann, Testa, Gloor, Aube,

Martin, Feindel, Guberman, & Simpson, 1983) is expected. That enhanced activation of the amygdala, mediated through the amygdalofugal pathways and the stria terminalis, can affect hypothalamic-releasing factors that control the release of ACTH (Gallagher, 1987) and the pituitary gonadotrophic hormones is well established (Aggleton & Miskin, 1986). The significant inputs from the orbital frontal cortex and anterior cingulate region (MacLean, 1990) into specific amygdaloid nuclei indicate that cognitive-affective processes and real or anticipated changes in personal bonding could influence the amygdala's modulation of hypothalamic function.

Childhood reinforcement histories that enhance the effect of the nonverbal (right hemispheric) components of emotional stress are expected to increase the incidence of both psychosomatic transformations and pseudocyesis (Persinger, 1989). Religious denominations that encourage acceptance of logical incongruities and extensive state-dependent behaviors (rituals) should be particularly effective; in this study, the ratio of Roman Catholic women to Protestant women was about 10:1.

Real or perceived changes in biological bonds (perhaps mediated as "sign stimuli"), for which there would be minimal verbal labels and hence limited "awareness," could increase the basal rate of brief afterdischarges from the right amygdaloid complex; they would disrupt rather than attenuate (in a manner analogous to ACTH release, see Gallagher, 1987) normal gonadotrophic periodicity. The maintained elevation of estrogen and progesterone would initiate the symptoms of pregnancy that would persist because the aberrant limbic modulation (augmented by unresolved cognitive and right-hemispheric processes) of the neurons controlling gonadotrophic-releasing factors would exhibit less sensitivity to normal hormonal feedback. However, at some point, without the usual chorionic factor from an embryo, the "pregnancy" would suddenly cease.

The surprising frequency of pseudocyesis in conjunction with the experients' prevalence of belief in alien intelligences, histories of imaginary playmates, frequent periods of memory blanks, and nocturnal immobility could also explain the occurrences of "missing embryos" (sudden cessation of symptoms of pseudocyesis) or "unexplained pregnancies" that have been associated for centuries with putative (alien/supernatural) abduction cases (Evans, 1984; Hopkins, 1987). As predicted (Persinger, 1989), women who report this phenomenon also display specific personality profiles and have experienced a significant recent disruption in their definition of self or social bonding (Taylor & Kreeger, 1987).

REFERENCES

AGGLETON, J. P., & MISKIN, M. The amygdala: sensory gateway to the emotions. In R. Plutchik & H. Kellerman (Eds.), *Emotion: theory, research, and experience.* New York: Academic Press, 1986. Pp. 281-299.

BABB, T. L., WILSON, C. L., & ISOKAWA-AKESSON, M. Firing patterns of human limbic neurons during stereo-encephalography (SEEG) and clinical temporal lobe seizures. *Electroencephalography and Clinical Neurophysiology*, 1987, 66, 467-482.

EVANS, H. *Visions, apparitions and alien visitors.* Wellingborough, North Hamptonshire: Aquarian. 1984

GALLAGHER, B B Endocrine abnormalities in human temporal lobe epilepsy. *The Yale Journal of Biology and Medicine*, 1987, 60, 93-97.

HERZOG, A G , SEIBEL, M. M., SCHOMER, D. L., VAITUKAITIS, J. L., & GESCHWIND, N. Reproductive endocrine disorders in women with partial seizures of temporal lobe origin. *Archives for Neurology*, 1986, 43, 341-346.

HOPKINS, B. Intruders: UFO abductions. *MUFON UFO Journal*, 1987, 227, 3-4.

MACLEAN, P. *The triune brain in evolution.* New York: Plenum, 1990.

MAKAREC, K., & PERSINGER, M. A. Temporal lobe signs: electroencephalographic validity and enhanced scores in special populations. *Perceptual and Motor Skills*, 1985, 60, 831-842.

MAKAREC, K., & PERSINGER, M. A. Electroencephalographic validation of a temporal lobe signs inventory in a normal population. *Journal of Research in Personality*, 1990, 24, 323-337.

PERSINGER, M. A. Geophysical variables and behavior: LV. Predicting the details of the visitor experiences and the personality of the experients: the temporal lobe factor. *Perceptual and Motor Skills*, 1989, 68, 55-65.

PERSINGER, M. A., & FISHER, S. D. Elevated, specific temporal lobe signs in a population engaged in psychic studies. *Perceptual and Motor Skills*, 1990, 71, 817-818.

PERSINGER, M. A., & MAKAREC, K. Temporal lobe signs and correlative behaviors displayed by normal populations. *The Journal of General Psychology*, 1987, 114, 179-195.

PERSINGER, M. A., & MAKAREC, K. Temporal lobe epileptic signs as a continuum within the normal population: their validity and reliability. *The Journal of General Psychology*, 1991, in press.

REMILLARD, G. M., ANDERMANN, F., TESTA, G. F., GLOOR, P., AUBE, M., MARTIN, J. B., FEINDEL, W., GUBERMAN, A., & SIMPSON, C. Sexual ictal manifestations predominate in women with temporal lobe epilepsy: a finding suggesting sexual dimorphism in the human brain. *Neurology*, 1983, 33, 323-329.

RICHARDS, P., & PERSINGER, M. A. Temporal lobe signs, the Dissociative Experience Scale and the Hemispheric Quotient. *Perceptual and Motor Skills* (submitted).

TAYLOR, J., & KREEGER, A. Recurrent pseudocyesis and hypomania. *British Journal of Psychiatry*, 1987, 151, 120-122.

VINGIANO, W. Hemisphericity and personality. *International Journal of Neuroscience*, 1989, 44, 263-274.

WILSON, S. C., & BARBER, T. X. The creative imagination scale as a measure of hypnotic responsiveness: applications to experimental and clinical hypnosis. *American Journal of Clinical Hypnosis*, 1978, 20, 235-249.

Accepted March 13, 1991.